REMARKS

In view of the foregoing amendments and the following remarks, Applicants respectfully request reexamination of the present application. Claim 35 has been amended, Claim 45 has been cancelled and no new claims have been added.

Support for the amendment to Claim 35 can be found, *inter alia*, at page 15, lines 25-28 of the present specification.

Applicants note with appreciation that Claims 32 and 33 have been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims.

Summary of the Invention

The present invention is directed to a method and apparatus for writing data to a magnetic recording medium, where a perpendicular write head is used to write data to a longitudinal recording medium. It has unexpectedly been found that by using a perpendicular write head to write data to a longitudinal recording medium, the write field gradient can be substantially increased. This leads to sharper magnetic transitions on the longitudinal media and leads to the ability to write data to a longitudinal medium that has a recording layer with a high magnetic coercivity. It has also been unexpectedly found that these results can be improved by controlling certain aspects of the magnetic recording medium, such as the thickness of the various layers.

Claims 1-3 and 5-18

The Examiner has rejected **Claims 1-2, 5-8 and 11** under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2003/0227701 by Clinton et al. in view of U.S. Patent No. 6,541,104 by Akimoto et al.

In addition, the Examiner has rejected **Claim 3** as set forth with respect to Claim 1, further in view of U.S. Patent No. 6,807,027 by McGeehin et al. **Claims 9-10 and 12-13** have been rejected as set forth with respect to Claim 1, further in view of U.S. Patent No. 5,041,922 by Wood et al. **Claim 14** has been rejected as set forth with respect to Claim 1, further in view of U.S. Patent No. 5,492,775 by Ahlert et al. **Claim 15** has been rejected as

set forth with respect to Claim 2, further in view of U.S. 2003/0227714 by Parker et al. **Claims 16-18** have been rejected as set forth with respect to Claim 1, further in view of U.S. Patent Publication No. 2004/0067390 by Koda et al.

In view of the following remarks, Applicants traverse these rejections.

Independent Claim 1:

The Examiner states that Clinton et al. disclose a magnetic recording device, comprising: a perpendicular write head comprising a write pole having a write pole tip and a return pole and a recording medium comprising a longitudinal magnetic recording layer and a soft magnetic underlayer; wherein during operation of the magnetic recording device the longitudinal recording layer is disposed in relation to the perpendicular write head to place the magnetic recording layer within an effective write gap formed by the perpendicular write head and the underlayer.

The Examiner admits that Clinton et al. do not disclose a non-magnetic spacer layer disposed between the longitudinal magnetic recording layer and the soft magnetic underlayer.

The Examiner states that Akimoto et al. teach this limitation (Fig. 1, 14) and concludes that it would have been obvious to have a non-magnetic spacer layer in Clinton et al; motivation being reduction in noise that would otherwise be contributed by the soft underlayer. (Referring to U.S. Patent Publication No. 2005/0190478 by Hsiao et al., paragraph 20, and Akimoto et al., Col. 4, line 65 to Col. 5, line 4).

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the

prior art and not based on applicant's disclosure. *In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

As motivation for modifying the recording medium of Clinton et al. by incorporating the non-magnetic spacer layer of Akimoto et al., the Examiner cites the "reduction in noise that would otherwise be contributed by the soft underlayer". However, Akimoto et al. is directed to a longitudinal magnetic recording medium having a soft magnetic keeper layer disposed beneath the magnetic recording layer, and a non-magnetic intermediate layer disposed between the two magnetic layers. Although Akimoto et al. does not disclose the type of read-write head used with the medium, it is reasonable to assume that a traditional longitudinal read-write head (e.g., a ring-type head) is used.

It is respectfully submitted that one of ordinary skill in the art would not look to a reference such as Akimoto et al. for the optimization of a device that includes a longitudinal recording medium with a perpendicular write head. According to Akimoto et al., the purpose of the soft magnetic layer (the "keeper layer") is to short-circuit the magnetic flux leakage from a transition area of the recording layer (Col. 1, lines 55-67). In contrast, the problem confronted by the current inventors was to provide a high write field and a strong write field gradient that is desirable when using a perpendicular write head with longitudinal media. The soft underlayer of the present invention does not saturate during write operations (See Specification at page 15, lines 4-12) and serves this purpose.

The purpose of the non-magnetic spacer layer disposed between the soft underlayer and the recording layer according to Akimoto et al. is to control the grain structure of the recording layer. According to the present invention, the non-magnetic spacer layer is included to reduce the loss of high frequency read signals without substantially degrading the write field strength or the write field gradient applied by the perpendicular write head.

Thus, although the Examiner cites a reference disclosing a non-magnetic spacer layer which *itself* has similar properties, it is respectfully submitted that one of ordinary skill in the art, at the time the present invention was made, would not have considered Akimoto et al. and its teachings for guidance when optimizing the properties of a device that includes a longitudinal magnetic recording medium with a perpendicular write head, since the magnetic interaction has different affects.

The Examiner has also cited Hsiao et al. as support for the proposed modification to Clinton et al. Applicants note that Hsiao et al. was published on September 1, 2005, from an application filed on March 1, 2004. Therefore, Hsiao et al. is not a prior reference with respect to the present application. While Applicants recognize that, in certain circumstances, references cited to show a universal fact need not be available as prior art before applicants filing date (*In re Wilson*, 311 F.2d 266, 135 USPQ 442 (CCPA 1962), Applicants submit that Hsiao et al. is not being applied in that manner.

In view of the foregoing, Applicants request removal of this rejection with respect to independent Claim 1.

Claim 2-3:

The Examiner states that Clinton et al. disclose that the perpendicular write head is a shielded pole write head comprising a write shield. Further, the Examiner admits that Clinton et al. and Akimoto et al. do not disclose or teach that the perpendicular write head is a monopole write head. However, McGeehin et al. teach this feature (Fig. 1, 26) and it is the Examiner's opinion that it would have been obvious to use a monopole write head in Clinton et al. in place of a shielded pole write head; motivation being reducing the size of the head.

However, McGeehin et al. does not remedy the shortcomings discussed with respect to the proposed combination of Clinton et al. and Akimoto et al. with respect to independent Claim 1. Indeed, McGeehin et al. merely disclose a perpendicular write head and disclose very few details regarding the magnetic recording medium. Therefore, removal of this rejection is also requested.

Claims 5-7:

The Examiner states that Akimoto et al. teach that the non-magnetic spacer layer (i.e., the intermediate layer) can have a thickness of from about 10 to 25 nanometers (Col. 2, lines 50-52) and that it would have been obvious to have a non-magnetic spacer layer with the thickness listed above in Clinton et al; motivation being having a medium with a practical coercivity and low noise (Col. 4, line 65 to Col. 5, line 4).

However, what Akimoto et al. disclose at Col. 2, lines 50-52 is that the intermediate

layer can have a thickness of 5 to 100 nanometers. In contrast, Claim 5 requires that the thickness is not greater than 40 nanometers, Claim 6 requires that the thickness is not greater than about 20 nanometers and Claim 7 requires that the thickness is from about 10 to 25 nanometers.

Unexpected results may render a "range within a range" unobvious. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). See also, MPEP 2144.05. However, Applicant can rebut a presumption of obviousness based on a claimed invention that falls within a prior art range by showing that there are new and unexpected results relative to the prior art. *Iron Grip Barbell Co., Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1322, 73 USPQ 2d 1225, 1228 (Fed. Cir. 2004).

As is discussed in the present specification at page 18, particularly with respect to Figure 10, the thickness range recited in these claims has been found to be highly desirable for the use with a *perpendicular* write field on longitudinal media, particularly for increasing the switching field, a fact that is not recognized by any of the prior art references of record. Applicants submit that this is a new and unexpected result, and removal of this rejection with respect to dependent Claims 5-7 is also requested.

Claim 8:

The Examiner states that Akimoto et al. teach this limitation (at Col. 2, lines 20-21) and that it would have been obvious to use NiFe as the material for the soft magnetic underlayer in Clinton et al.; motivation being reduction in the demagnetization field of the transition area (Col. 1, lines 60-61).

However, as is discussed above, the motivation for providing the soft magnetic underlayer according to the present invention is to provide a flux return path for the perpendicular write head. As such, one of ordinary skill in the art would not look to Akimoto et al. and its teachings regarding reduction of the demagnetization field to provide guidance as to the preferred materials to use for such an application. Therefore, removal of this rejection is also requested.

Claim 9-13:

The Examiner admits that Clinton et al. and Akimoto et al. do not disclose or teach that the soft magnetic underlayer has a magnetic coercivity of not greater than about 5 Oersteds. The Examiner states that Wood et al. teach this limitation (Col. 8, lines 65-67) and concludes that it would have been obvious to have a low coercivity soft magnetic underlayer in Clinton et al; motivation being effecting transfer of the flux between the head and the magnetic recording layer (Col. 6, lines 27-29).

With respect to Claim 10, the Examiner admits that Clinton et al. and Akimoto et al. do not disclose that the soft magnetic underlayer has a magnetic permeability of at least about 50, but states that Wood et al. teach this limitation (Col. 8, line 68 – Col. 9, line 2) and that it would have been obvious to have a high permeability soft magnetic underlayer in Clinton et al.; motivation being effecting transfer of the flux between the head and the magnetic recording layer (Col. 6, lines 27-29).

With respect to Claim 11, the Examiner states that Clinton et al. disclose that the soft magnetic underlayer has a thickness sufficient to prevent saturation of the underlayer by the perpendicular write head in that this is shown through disclosing that the SUL "pulls" the magnetic field through the recording medium.

With respect to Claims 12-13, the Examiner admits that Clinton et al. and Akimoto et al. do not disclose or teach that the soft magnetic underlayer has a thickness of at least about 30 nm and up to 200 nm. However, the Examiner states that Wood et al. teach this limitation (Col. 8, lines 61-62) and that it would have been obvious to have a soft magnetic underlayer with a thickness of from about and at least 30 nm to 200 nm in Clinton et al.; motivation being effecting transfer of the flux between the head and the magnetic recording layer (Col. 6, lines 27-29).

In addition to the position set forth above with respect to independent Claim 1, Wood et al. is also not directed to the use of a perpendicular write head with a longitudinal recording media and it is submitted that one would not consider the teachings of Wood et al. for guidance in constructing such as device, particularly with regard to the properties of the material layers. For example, the motivation for providing such a structure according to the present invention is that the soft underlayer should have properties such that it does not saturate during write operations using the *perpendicular* write head.

In contrast, Wood et al. clearly disclose that the keeper layer *should be* magnetically saturable to create a bias flux (See the Abstract of Wood et al.) Therefore, removal of this rejection is also requested.

Claim 14:

The Examiner admits that Clinton et al. and Akimoto et al. do not disclose or teach that the longitudinal magnetic recording layer has a coercivity of at least about 4000 Oe. However, the Examiner states that Ahlert et al. teach this limitation (at Claim 6) and that it would have been obvious to have a magnetic recording layer with a coercivity of at least 4kOe in Clinton et al.; motivation being ensuring that the recording layer is not demagnetized (i.e., ensuring that data is not lost).

However, as is discussed with respect to the present invention at page 19, lines 1-11, it has been found that the use of the perpendicular write head with longitudinal recording media according to the present invention advantageously enables higher coercivity longitudinal media to be *written* due to the increase in the write field gradient. The issue with high coercivity media is not that written data is not lost, but rather that a sufficient field can be generated to write data. The unexpected high write field gradient according to the present invention produces the unexpected result that the longitudinal recording media can have an extremely high coercivity magnetic recording layer and data can still be written to the media. Therefore, removal of this rejection is also requested.

Claim 15:

The Examiner admits that Clinton et al. and Akimoto et al. do not disclose or teach that the distance from the top of the soft magnetic underlayer to the write pole tip is about equal to the distance from the write pole tip to the write shield. However, the Examiner states that Parker et al. teach this limitation (paragraph 26; by Applicant's own definition at page 13, lines 26-27 of the specification, if the ratio of the distances is anywhere between 1:2 and 2:1, the above limitation is satisfied). The Examiner concludes that it would have been obvious to have the above ratio of distances in Clinton et al.; motivation being the ability for the magnetic flux in a write head to "jump" across the gap, travel in a soft underlayer of the recording medium to a location under the return pole, and then jump back into the return pole (paragraph 26).

In addition to the position set forth with respect to independent Claim 1, it is also noted that Parker et al. is not directed to the use of a longitudinal recording media. Further, Parker et al. does not disclose the use of a non-magnetic spacer layer between the soft underlayer and a magnetic recording layer. Therefore, it is respectfully submitted that the Examiner has merely selected certain portions of Parker et al. to combine with selected portions of the other references to arrive at the present invention, using the present specification as a guide.

Therefore, removal of this rejection is also requested.

Claims 16-18:

The Examiner admits that Clinton et al. and Akimoto et al. do not disclose or teach that the distance from the top of the soft magnetic underlayer to the center of the longitudinal magnetic recording layer is about equal to the magnetic spacing (defined in the specification at page 13, lines 21-23 as the distance from the center of the longitudinal magnetic recording layer to the pole tip); that the distance from the top of the soft magnetic underlayer to the center of the longitudinal magnetic recording layer is from about 13 to about 31 nanometers; and that the magnetic spacing is from about 10 to about 30 nanometers. However, the Examiner states that Koda et al. teach these limitations (Fig. 1; paragraphs 17, 37-38, 40-42; distance between the head and medium = 5nm; thickness of lubricant layer = 1nm; thickness of protective layer = 3nm; thickness of recording layer = 12 nm; thickness of underlayer = 5 nm – 20 nm). The Examiner concludes that it would have been obvious to have the distances provided above in Clinton et al.; motivation being securing the crystalline orientation of the recording layer while suppressing the increase in medium noise (paragraph 17).

However, as is discussed above, none of these references suggest any parameters when applying a perpendicular write head to a longitudinal recording media in accordance with the present invention. The motivation suggested by the Examiner does not address the unique problems encountered with respect to a perpendicular write head and a longitudinal medium. Thus, it is respectfully submitted that such references would not be considered by one of ordinary skill in the art, at the time the invention was made, to be relevant to such a determination. Therefore, removal of this rejection is also requested.

Claims 19-34

The Examiner has rejected **Claims 19-26 and 34** under 35 U.S.C. 103(a) as being unpatentable over Clinton et al. in view of Akimoto et al. and further in view of U.S. Patent No. 5,041,922 by Wood et al. The Examiner has rejected **Claim 27** as set forth with respect to Claim 19, and further in view of Ahlert et al. The Examiner has rejected **Claim 28** as set forth with respect to Claim 19, and further in view of U.S. Patent Publication No. US 2003/0227714 by Parker et al. The Examiner has rejected **Claims 29-31** as set forth with respect to Claim 19, further in view of U.S. Patent Publication No. U.S. 2004/0067390 by Koda et al.

In view of the following remarks, Applicants traverse these rejections.

Independent Claim 19:

The Examiner states that regarding independent Claim 19, Clinton et al. disclose a shielded pole write head having a write pole tip and a write shield and a magnetic recording medium disposed under the shielded pole write head, the magnetic recording medium comprising a soft magnetic underlayer and a longitudinal magnetic recording layer disposed over the underlayer.

The Examiner admits that Clinton et al. do not disclose a non-magnetic spacer layer disposed between the soft magnetic underlayer and the longitudinal magnetic recording layer. However, the Examiner states that Akimoto et al. teach this limitation. The Examiner concludes that it would have been obvious to have a non-magnetic spacer layer in Clinton et al.; motivation being reduction in noise that would otherwise be contributed by the soft underlayer.

The Examiner admits that Clinton et al. also do not disclose that the magnetic permeability of the soft magnetic underlayer is at least 50. However, the Examiner states that Wood et al. teach this limitation (Col. 8, line 68 – Col. 9, line 2) and that it would have been obvious to have a high permeability soft magnetic underlayer in Clinton et al.; motivation being effecting transfer of the flux between the head and the magnetic recording layer (Col. 6, lines 27-29).

As is discussed above with respect to Claim 10, Wood et al. is also not directed to the use of a perpendicular write head with a longitudinal recording media and it is submitted that one would not consider the teachings of Wood et al. for guidance in constructing such as device, particularly with regard to the properties of the material layers. For example, the motivation for providing such a structure according to the present invention is that the soft underlayer should have properties such that it does not saturate during write operations using the *perpendicular* write head.

In contrast, Wood et al. clearly disclose that the keeper layer *should be* magnetically saturable to create a bias flux (See the Abstract of Wood et al.) Therefore, removal of this rejection is requested.

Claims 20-21:

The Examiner admits that Clinton et al. do not disclose that the soft magnetic underlayer has a thickness of at least about 30 nm and up to 200 nm. However, the Examiner states that Wood et al. teach this limitation (Col. 8, lines 61-62) and that it would have been obvious to have a soft magnetic underlayer with a thickness of from about and at least 30 nm and up to 200 nm in Clinton et al.; motivation being effecting transfer of the flux between the head and the magnetic recording layer (Col. 6, lines 27-29).

As is discussed above with respect to Claim 19, the disclosure of Wood et al. is not directed to the use of a perpendicular write head with a longitudinal recording media and it is submitted that one would not consider the teachings of Wood et al. for guidance in constructing such as device. Therefore, removal of this rejection is also requested.

Claim 22:

As with Claim 19, the Examiner states that Wood et al. teach the limitation that the magnetic permeability is at least 100 (Col. 8, line 68 – Col. 9, line 2) and that it would have been obvious to have a high permeability soft magnetic underlayer in Clinton et al.; motivation being effecting transfer of the flux between the head and the magnetic recording layer (Col. 6, lines 27-29). Again, Wood et al. clearly disclose that the keeper layer *should be* magnetically saturable to create a bias flux (See the Abstract of Wood et al.) Therefore, Wood et al. would not be considered relevant in this respect and removal of this rejection is

also requested.

Claim 23:

The Examiner admits that Clinton et al. do not disclose that the soft magnetic underlayer has a magnetic coercivity of not greater than about 5 Oersteds. However, the Examiner states that Wood et al. teach this limitation as well. As is discussed above, Wood et al. clearly disclose that the keeper layer *should be* magnetically saturable to create a bias flux. Therefore, Wood et al. would not be considered relevant in this respect and removal of this rejection is also requested.

Claims 24-26:

The Examiner admits that Clinton et al. do not disclose the limitations of these claims. However, the Examiner states that Akimoto et al. teach that the non-magnetic spacer layer (i.e., the intermediate layer) can have a thickness of from about 10 to 25 nanometers (Col. 2, lines 50-52) and that it would have been obvious to have a non-magnetic spacer layer with the thickness listed above in Clinton et al.; motivation being having a medium with a practical coercivity and low noise (Col. 4, line 65 – Col. 5, line 4).

As is discussed above with respect to Claims 5-7, the thickness range(s) recited in these claims has been found to be highly desirable for the use with a *perpendicular* write field on longitudinal media, particularly for increasing the switching field, a fact that is not recognized by any of the prior art references of record. Applicants submit that this is a new and unexpected result, and removal of this rejection with respect to dependent Claims 24-26 is also requested.

Claim 27:

The Examiner admits that the references do not disclose or teach that the longitudinal magnetic recording layer has a coercivity of at least about 4000 Oe. However, the Examiner states that Ahlert et al. teach this limitation (Claim 6) and that it would have been obvious to have a magnetic recording layer with a coercivity of at least 4kOe in Clinton et al.; motivation being ensuring that the recording layer is not demagnetized (i.e., ensuring that data is not lost).

As is discussed above with respect to Claim 14, the use of the perpendicular write

head with longitudinal recording media according to the present invention advantageously enables higher coercivity longitudinal media to be *written* due to the increase in the write field gradient. The issue with high coercivity media is not that written data is not lost, but rather that a sufficient field can be generated to write data. The unexpected high write field gradient according to the present invention produces the unexpected result that the longitudinal recording media can have an extremely high coercivity magnetic recording layer and data can still be written to the media. Therefore, removal of this rejection is also requested.

Claim 28:

The Examiner admits that the above references do not disclose that the distance from the top of the soft magnetic underlayer to the write pole tip is about equal to the distance from the write pole tip to the write shield. However, the Examiner states that Parker et al. teach this limitation (paragraph 26; by Applicant's own definition at page 13, lines 26-27 of the specification, if the ratio of the distances is anywhere between 1:2 and 2:1, the above limitation is satisfied) and that it would have been obvious to have the above ratio of distances in Clinton et al.; motivation being the ability for the magnetic flux in a write head to "jump" across the gap, travel in a soft underlayer of the recording medium to a location under the return pole, and then jump back into the return pole (paragraph 26).

As is discussed above with respect to Claim 15, Parker et al. is not directed to the use of a longitudinal recording media. Further, Parker et al. does not disclose the use of a non-magnetic spacer layer between the soft underlayer and a magnetic recording layer. Therefore, removal of this rejection is also requested.

Claims 29-31:

The Examiner admits that the references do not disclose or teach: that the distance from the top of the soft magnetic underlayer to the center of the longitudinal magnetic recording layer is about equal to the magnetic spacing (defined in the specification at page 13, lines 21-23 as the distance from the center of the longitudinal magnetic recording layer to the pole tip); that the distance from the top of the soft magnetic underlayer to the center of the longitudinal magnetic recording layer is from about 13 to about 31 nanometers; and that the magnetic spacing is from about 10 to about 30 nanometers. However, the

Examiner states that Koda et al. teach these limitations (Fig. 1; paragraphs 17, 37-38, 40-42; distance between the head and medium = 5nm; thickness of lubricant layer – 1nm; thickness of protective layer = 3nm; thickness of recording layer = 12 nm; thickness of underlayer = 5nm – 20 nm) and concludes that it would have been obvious to have the distances provided above in Clinton et al.; motivation being securing the crystalline orientation of the recording layer while suppressing the increase in medium noise (paragraph 17).

As is discussed above with respect to Claims 16-18, none of these references suggest any parameters when applying a perpendicular write head to a longitudinal recording media in accordance with the present invention. The motivation suggested by the Examiner does not address the unique problems encountered with respect to a perpendicular write head and a longitudinal medium. Thus, it is respectfully submitted that such references would not be considered by one of ordinary skill in the art, at the time the invention was made, to be relevant to such a determination. Therefore, removal of this rejection is also requested.

Claims 35-44

The Examiner has rejected independent **Claims 35-44** under 35 U.S.C. 103(a) as being unpatentable over Akimoto et al. in view of Wood et al., and further in view of Ahlert et al.

Claim 35 has been amended to recite that the longitudinal recording layer comprises a cobalt-based alloy.

Independent Claim 35:

The Examiner states that Akimoto et al. disclose a magnetic recording medium, comprising: a rigid substrate; an underlayer disposed over the substrate; a non-magnetic spacer layer having a thickness from 10 to 25 nanometers; and a longitudinal magnetic recording layer disposed over the non-magnetic spacer layer.

The Examiner admits that Akimoto et al. fail to disclose that the longitudinal recording layer has a coercivity of at least 4000 Oe. However, the Examiner states that

Ahlert et al. teach this limitation and that it would have been obvious to have a magnetic recording layer with a coercivity of at least 4000 Oe in Akimoto et al; motivation being ensuring that the recording layer is not demagnetized (i.e., ensuring that data is not lost).

As is discussed above with respect to Claims 5-7 and 14, Applicants respectfully submit that one of ordinary skill in the art would not be motivated to provide a longitudinal recording layer in the medium of Akimoto et al. with such a coercivity, since media having such a high coercivity is very difficult to write using a traditional longitudinal read-write head. Further, the thickness range recited in Claim 35 has been found to be highly desirable for the use with a *perpendicular* write field on longitudinal media, particularly for increasing the switching field, a fact that is not recognized by any of the prior art references of record.

Therefore, removal of this rejection is requested.

The other aspects of Claims 36-44 have been discussed in detail above and that discussion is equally applicable to Claims 36-44, which further limit the inventive aspects of Claim 35.

Independent Claim 45

The Examiner has rejected Claim 45 under 35 U.S.C. 102(e) as being anticipated by Clinton et al. Claim 45 has been cancelled herein.

Independent Claim 46

The Examiner has rejected independent Claim 46 under 35 U.S.C. 103(a) as being unpatentable over Clinton et al. in view of Ahlert et al.

The Examiner states that Clinton et al. disclose a magnetic recording device, comprising: a perpendicular write head comprising a write pole having a write pole tip, and a return pole; and a recording medium comprising a longitudinal magnetic recording layer and a soft magnetic underlayer, wherein during operation of the magnetic recording device the longitudinal recording layer is disposed in relation to the perpendicular write head to place the magnetic recording layer within an effective write gap formed by the perpendicular write head and the underlayer.

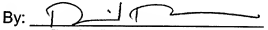
The Examiner admits that Clinton et al. do not disclose that the longitudinal magnetic recording layer has a coercivity of at least 4000 Oe. However, the Examiner states that Ahlert et al. teach this limitation (Claim 6) and that it would have been obvious to have a magnetic recording layer with a coercivity of at least 4kOe in Clinton et al. in view of Akimoto et al., and further in view of Wood et al; motivation being ensuring that the recording layer is not demagnetized (i.e. ensuring that data is not lost).

Each of these aspects of the invention have been discussed above. Again, it is respectfully submitted that the use of such a high coercivity medium is enabled by the unexpected discovery that the perpendicular write head can be used to create a sufficiently high write field gradient that a the high coercivity medium can be written upon. Therefore, removal of this rejection is also requested.

Applicants believe that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecute and or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,

MARSH FISCHMANN & BREYFOGLE LLP

By: 

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